

HIR98-1488D

REMARKS

Claims 1-3, 6, 8-12, 14, 17-22, 24-31, and 33-36 are pending in the Application. Reconsideration and allowance of the claims is respectfully requested in view of the above amendments and the following remarks.

Claim Rejections Under 35 U.S.C. § 112

Claims 1-3, 6, 8-12, 14, 17-22, 24-31, and 33-35 stand rejected under 35 U.S.C. § 112, first paragraph as failing to comply with the written description requirement. Claim 1 has been previously amended to specifically recite the minimum thickness of the claimed sheet. Support for this amendment may be found at least at line 5 of page 79 and line 1 of page 81. Applicants believe no new matter has been introduced by the previous amendment.

Claims 1-3, 6, 8-12, 14, 17-22, 24-31, and 33-35 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the invention. In particular, the Examiner has asserted that it is unclear what the thickness limitation relates to when the energy conversion material is a combination of a sheet and a fiber. Applicants respectfully disagree as the thickness limitation states "the sheet has a thickness of 1 millimeter or greater" and as such the limitation refers to the sheet and not the fiber. One of ordinary skill in the art would clearly understand that when the energy conversion material is a combination of a sheet and a fiber then the sheet portion of the material has a thickness of 1 millimeter or greater and the fiber may be smaller or larger.

Claim Rejections Under 35 U.S.C. § 103(a)

Claims 1, 2, 6, 8, 12, 14, 17-22, 25-27, 29-31 and 33-36 stand rejected under 35 U.S.C. § 102(b), as allegedly anticipated by U.S. Patent 5,439,512 to Kamijima. Applicants respectfully traverse this rejection.

As summarized by the Examiner, Kamijima teaches a composition of an anti-fouling paint that uses acrylic rubber with DCHBSA. The Examiner has asserted that the paint reads on the instantly claimed sheet because once the paint is applied, particularly on a broad surface, it becomes a sheet. The paint of Kamijima results in a coating having a thickness of 50

HIR98-1488D

micrometers (Col. 20, line 34) to 100 micrometers (Col. 23, line 16).

In making the obviousness rejection the Examiner has stated "to determine the thickness required such that sufficient anti-fouling property is supplied to the hull and reapplication is required least often would have been obvious at the time the invention was made to a person having ordinary skill in the art through routine experimentation." (Office action page 5).

For an obviousness rejection to be proper, the Examiner must meet the burden of establishing a prima facie case of obviousness. *In re Fine*, 5 U.S.P.Q.2d 1596, 1598 (Fed. Cir. 1988).

Establishing a prima facie case of obviousness requires that all elements of the invention be disclosed in the prior art. *In Re Wilson*, 165 U.S.P.Q. 494, 496 (C.C.P.A. 1970).

Firstly, Kamijima does not disclose the claimed thickness and hence a prima facie case of obviousness has not been made. Additionally, the Examiner has asserted that the claimed thickness would be obvious in order to reduce reapplication of the paint. The Examiner is asserting that increasing the thickness of Kamijima by ten fold or more is "routine experimentation". Applicants respectfully assert that there is no support for this assertion as thicker does not necessarily translate to better with regard to paint, particularly marine paint. Increasing paint thickness when applied to the hull of a boat increases drag and hence decreases performance – particularly speed and fuel economy. Furthermore there is no support in Kamijima for the concept that a thicker paint would resist barnacle growth better than a thinner paint as the inhibitory effect of the paint on barnacle growth is likely the result of a surface property that would be unaffected by thickness. In addition, there is no support for the idea that a thicker paint would adhere to the hull of a boat better than a thinner paint. Accordingly, Applicants respectfully assert that the claimed subject matter is patentable over Kamijima because the claimed thickness is non-obvious.

Claims 1-3, 6, 8-12, 14, 17, 18, 19, 21, 22, 25, 26, 27, 29-31 and 33-36 stand rejected under 35 U.S.C. § 103(a), as allegedly unpatentable over Cooper in view of U.S Patent 5,858,521 to Okuda et al (Okuda). Claim 24 stands rejected under 35 U.S.C. § 103(a), as allegedly unpatentable over Cooper in view of Okuda and U.S Patent No. 4,602,054 to Kang et al (Kang) or alternatively over Okuda in view of Kang. Claim 28 stands rejected under 35 U.S.C. § 103(a), as allegedly unpatentable over Cooper in view of Okuda and U.S Patent No. 4,218,349 to

HIR98-1488D

Minatono (Minatono) and Okuda in view of Minatono. Claims 1-3, 6, 8-12, 14, 17, 18, 19, 21, 22, 25, 26, 27, 29-31, and 33-35 stand rejected as allegedly unpatentable over Okuda. Applicants respectfully traverse these rejections.

Cooper discloses a sulfur curable conjugate diene rubber compound formulation containing a silica reinforcing filler and a coupling agent and a benzothiazyl sulfenamide accelerator. (Abstract) As stated by the Examiner Cooper fails to teach the claimed amount of benzothiazyl sulfenamide compounds.

The Examiner has asserted that Okuda teaches modifying the vulcanizing agents which includes modifying the amount of vulcanizing accelerators. To further support his position the Examiner has cited Asaka et al. (JP 05-025328) to show that one of ordinary skill in the art "would consider vulcanizing agents any material that affect the degree of vulcanization, explicitly including sulfur based vulcanization agents and vulcanizing accelerators." (Office Action, page 2)

Okuda, at Col. 3, lines 21-39, makes a distinction between **vulcanization agents** such as sulfur and peroxides and **vulcanization accelerators** such as N-cyclohexyl-2-benzothiazolyl sulfenamide. Okuda discusses, in Column 5, lines 10-35, the desired rubber viscosity of the viscoelastic layer composition before vulcanization and the modulus of dynamic shearing elasticity after vulcanization. Okuda further teaches that these physical properties can be adjusted by "the types and the added amounts of the above-mentioned vulcanizing agents, softening agents and fillers." (emphasis added, Col. 5, lines 31-35) Okuda does not teach or suggest that the physical properties can be modified by the amount of the vulcanization accelerator. As benzothiazyl sulfenamide compounds such as DCHBSA are vulcanization accelerators, not vulcanization agents, Okuda does not teach or suggest modification of the amount of vulcanization accelerators to attain particular physical properties.

Asaka discloses a composition containing a vulcanizing agent consisting of (i) a sulfur based vulcanization agent, (ii) a thiuram-type vulcanization accelerator; and (iii) zinc oxide as a vulcanization accelerating assistant.

The Examiner appears to be asserting that since Asaka groups a sulfur based vulcanization agent, a thiuram-type vulcanization accelerator and zinc oxide together as vulcanizing agents that one of ordinary skill in the art would make the same grouping when

HIR98-1488D

reading Okuda and hence interpret Okuda's teaching at Col. 4, lines 4-9 and Col. 5, lines 31-35, as including vulcanizing accelerators. Applicants respectfully disagree. Asaka, like Okuda, makes a distinction between a vulcanization agent and a vulcanization accelerator. It is difficult to fully interpret the ramifications of Asaka's language based upon an Abstract, particularly grouping the vulcanization agent, vulcanization accelerator and zinc oxide together as a vulcanizing agent. Irregardless, Okuda's language is quite clear. Okuda discusses and not only distinguishes vulcanizing agents from vulcanization accelerators, but Okuda distinguishes between two different types of vulcanizing agents (sulfur and peroxide) as well as the amount of each type. Furthermore, Okuda specifically discloses the use of a vulcanization accelerator in the Examples, separate and distinct from the vulcanizing agent. In view of the specificity of Okuda's language Applicant respectfully re-assert that Okuda does not teach or suggest modification of the amount of vulcanization accelerators to attain particular physical properties.

For an obviousness rejection to be proper, the Examiner must meet the burden of establishing a prima facie case of obviousness. *In re Fine*, 5 U.S.P.Q.2d 1596, 1598 (Fed. Cir. 1988). Establishing a prima facie case of obviousness requires that all elements of the invention be disclosed in the prior art. *In Re Wilson*, 165 U.S.P.Q. 494, 496 (C.C.P.A. 1970). Okuda does not rectify the deficiency Cooper because Okuda teaches that the amounts of vulcanizing agents, not vulcanizing accelerators, can alter physical properties. As a result, Okuda does not teach or suggest modifying the amounts of vulcanization accelerators as taught by Cooper. Thus, Applicants believe that a prima facie case of obviousness has not been established because not all elements of the claims have been disclosed.

With regard to the rejections that additionally employ Kang or Minatono Applicants respectfully assert, as explained in the previous amendment, that Kang and Minatono do not teach the claimed amount of benzothiazyl sulfenamide compounds and thus do not rectify the deficiency of Cooper and Okuda.

With regard to the rejection of Claims 1-3, 6, 8-12, 14, 17, 18, 19, 21, 22, 25, 26, 27, 29-31, and 33-35 in view of Okuda alone, Applicants believe that Okuda alone does not provide sufficient basis for a finding of obviousness. Okuda provides no broad teaching with regard to the amount of vulcanization accelerator that may be employed. Okuda's sole teaching with regard to the amount of vulcanization accelerator can be found in the examples where zinc

HIR98-1488D

flowers are used in an amount of 5 parts by weight (Tables in Cols. 14 and 15). Since Okuda's sole teaching about the amounts of vulcanization accelerators is half of the lower limit that is claimed Applicants respectfully assert that the claimed method is not obvious in view of Okuda.

It is believed that the foregoing amendments and remarks fully comply with the Office Action and that the claims herein should now be allowable to Applicants. Accordingly, reconsideration and allowance is requested.

If there are any additional charges with respect to this Amendment or otherwise, please charge them to Deposit Account No. 06-1130.

Respectfully submitted,
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